

5. (Amended) A nucleic acid probe for determining a concentration of a target nucleic acid, said probe being labeled with a fluorescent dye, wherein:

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said probe is labeled at an end portion thereof with said fluorescent dye, and

said probe has a base sequence designed such that, when said probe is hybridized with said target nucleic acid, base pairs in a probe-nucleic acid hybrid complex form at least one G (guanine) and C (cytosine) pair at said end portion;

whereby said fluorescent dye is reduced in fluorescence emission when said probe is hybridized with said target nucleic acid, wherein said probe can be further extended at its 3'-end by a DNA polymerase.

6. (Amended) The nucleic acid probe according to claim 5, wherein said probe has G or C as a 3' end base and is labeled at said 3' end thereof with said fluorescent dye.

7. (Amended) The nucleic acid probe according to claim 5, wherein said probe has G or C as a 5' end base and is labeled at said 5' end thereof with said fluorescent dye.

8. (Amended) [A] The nucleic acid probe according to claim 4, wherein a hydroxyl group of a 2' or 3' carbon of a ribose or a 3' carbon of a deoxyribose at 3' end of said probe has been phosphorylated.

9. (Amended) The nucleic acid probe according to claim 2 or claim 5, wherein an oligoribonucleotide of said probe is a chemically-modified nucleic acid.

10. (Amended) The nucleic acid probe according to claim 2 or claim 5, wherein an oligonucleotide of said probe is a chemiric oligonucleotide comprising a ribonucleotide and a deoxyribonucleotide.

11. (Amended) The nucleic acid probe according to claim 10, wherein said ribonucleotide is a 2'-O-methyloligoribonucleotide.

a² 15. (Amended) A kit for analyzing or determining polymorphism or mutation of a target nucleic acid or gene, comprising a nucleic acid probe according to claim 2 or claim 5.

a³ 21. (Amended) The kit according to claim 15, further comprising a helper probe for being added to a hybridization reaction system.

23. (Amended) A device for determining concentrations of nucleic acids, comprising:
a solid support, and
a nucleic acid probe according to claim 2 or claim 5 or a different nucleic acid probe bound on a surface of said solid support, said different nucleic acid probe having a structure designed such that said probe comprises two fluorescent dyes of different kinds in a molecule and that, owing to interaction between said two fluorescent dyes, said probe quenches or emits fluorescence when said probe is not hybridized with said target nucleic acid but emits fluorescence or quenches when said probe is hybridized with said target nucleic acid;

a⁴ whereby said device can determine said concentration of said target nucleic acid by hybridizing said target nucleic acid to said probe or said different probe.

24. (Amended) The device according to claim 23, wherein said probes or said different robes are arranged and bound in an array pattern on said surface of said solid support.

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Sub 25. (Amended) The device according to claim 23 or claim 24, wherein said probes or different probes bound on said surface of said solid support are each independently provided with at least one temperature sensor and at least one heater arranged on an opposite surface of said solid support such that an area of said solid support, where said probe or different probe is bound, can be controlled to meet optimal temperature conditions.

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26. (Amended) (Amended) The device according to claim 23 or claim 24, wherein said probe or different probes are bound at end portions, where said probes or different probes are labeled with no fluorescent dye on said surface of said solid support.

Please add the following claims:

46. (New) The nucleic acid probe of claim 2 or claim 5, wherein said fluorescent dye is selected from the group consisting of FITC, BODIPY FL, BODIPY FL/C3, 6-joe, BODIPY TMR, BODIPY FL/C6, Alexa 488, and Alexa 532.

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47. (New) A nucleic acid probe for determining a concentration of a target nucleic acid, said probe being labeled with a fluorescent dye, wherein:
said probe is labeled at an end portion thereof with said fluorescent dye, and
said probe has a base sequence designed such that, when said probe is hybridized with said target nucleic acid, base pairs in a probe-nucleic acid hybrid complex form at least one G (guanine) and C (cytosine) pair at said end portion;

whereby said fluorescent dye is reduced in fluorescence emission when said probe is hybridized with said target nucleic acid, wherein said probe has G or C as a 3' end base and is labeled at said 3' end thereof with said fluorescent dye.

48. (New) The nucleic acid probe according to claim 47, wherein said probe has G or C as a 5' end base and is labeled at said 5' end thereof with said fluorescent dye.

49. (New) The nucleic acid probe according to claim 48, wherein a hydroxyl group of a 2' or 3' carbon of a ribose or a 3' carbon of a deoxyribose at 3' end of said probe has been phosphorylated.

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50. (New) The nucleic acid probe according to claim 47, wherein an oligoribonucleotide of said probe is a chemically-modified nucleic acid.

51. (New) The nucleic acid probe according to claim 47, wherein an oligonucleotide of said probe is a chemiric oligonucleotide comprising a ribonucleotide and a deoxyribonucleotide.

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52. (New) The nucleic acid probe according to claim 51, wherein said ribonucleotide is a 2'-O-methyloligoribonucleotide.

53. (New) A kit for analyzing or determining polymorphism or mutation of a target nucleic acid or gene, comprising a nucleic acid probe according to claim 47.

54. (New) The kit according to claim 53, further comprising a helper probe for being added to a hybridization reaction system.

55. (New) A device for determining concentrations of nucleic acids, comprising:
a solid support, and

a nucleic acid probe according to claim 47 or a different nucleic acid probe bound on a surface of said solid support, said different nucleic acid probe having a structure designed such that said probe comprises two fluorescent dyes of different kinds in a molecule and that, owing to interaction between said two fluorescent dyes, said probe quenches or emits fluorescence when said probe is not hybridized with said target nucleic acid but emits fluorescence or quenches when said probe is hybridized with said target nucleic acid;

whereby said device can determine said concentration of said target nucleic acid by hybridizing said target nucleic acid to said probe or said different probe.

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56. (New) The device according to claim 55, wherein said probes or said different robes are arranged and bound in an array pattern on said surface of said solid support.

57. (New) The device according to claim 55 or claim 56, wherein said probes or different probes bound on said surface of said solid support are each independently provided with at least one temperature sensor and at least one heater arranged on an opposite surface of said solid support such that an area of said solid support, where said probe or different probe is bound, can be controlled to meet optimal temperature conditions.

58. (New) The device according to claim 55 or claim 56, wherein said probe or different probes are bound at end portions, where said probes or different probes are labeled with no fluorescent dye on said surface of said solid support.

59. (New) The nucleic acid probe of claim 47, wherein said fluorescent dye is selected from the group consisting of FITC, BODIPY FL, BODIPY FL/C3, 6-joe, BODIPY TMR, BODIPY FL/C6, Alexa 488, and Alexa 532.

60. (New) A nucleic acid probe for determining a concentration of a target nucleic acid, said probe being labeled with a fluorescent dye, wherein:

said probe is labeled at an end portion thereof with said fluorescent dye, and

said probe has a base sequence designed such that, when said probe is hybridized with said target nucleic acid, base pairs in a probe-nucleic acid hybrid complex form at least one G (guanine) and C (cytosine) pair at said end portion;

wherein said fluorescent dye is reduced in fluorescence emission when said probe is hybridized with said target nucleic acid, wherein said probe has C as a 5' end base and is labeled at said 5' end thereof with said fluorescent dye, and a hydroxyl group of a 2' or 3' carbon of a ribose, or a 3' carbon of a deoxyribose at the 3' end of said probe is phosphorylated.

61. (New) The nucleic acid probe according to claim 60, wherein said probe has G or C as a 5' end base and is labeled at said 5' end thereof with said fluorescent dye.

62. (New) The nucleic acid probe according to claim 61, wherein a hydroxyl group of a 2' or 3' carbon of a ribose or a 3' carbon of a deoxyribose at 3' end of said probe has been phosphorylated.

63. (New) The nucleic acid probe according to claim 60, wherein an oligoribonucleotide of said probe is a chemically-modified nucleic acid.

64. (New) The nucleic acid probe according to claim 60, wherein an oligonucleotide of said probe is a chemiric oligonucleotide comprising a ribonucleotide and a deoxyribonucleotide.

65. (New) The nucleic acid probe according to claim 64, wherein said ribonucleotide is a 2'-O-methyloligoribonucleotide.

66. (New) A kit for analyzing or determining polymorphism or mutation of a target nucleic acid or gene, comprising a nucleic acid probe according to claim 60.

67. (New) The kit according to claim 66, further comprising a helper probe for being added to a hybridization reaction system.

68. (New) A device for determining concentrations of nucleic acids, comprising:
a solid support, and

a nucleic acid probe according to claim 60 or a different nucleic acid probe bound on a surface of said solid support, said different nucleic acid probe having a structure designed such that said probe comprises two fluorescent dyes of different kinds in a molecule and that, owing to interaction between said two fluorescent dyes, said probe quenches or emits

fluorescence when said probe is not hybridized with said target nucleic acid but emits fluorescence or quenches when said probe is hybridized with said target nucleic acid;

whereby said device can determine said concentration of said target nucleic acid by hybridizing said target nucleic acid to said probe or said different probe.

69. (New) The device according to claim 68, wherein said probes or said different robes are arranged and bound in an array pattern on said surface of said solid support.

70. (New) The device according to claim 68 or claim 69, wherein said probes or different probes bound on said surface of said solid support are each independently provided with at least one temperature sensor and at least one heater arranged on an opposite surface of said solid support such that an area of said solid support, where said probe or different probe is bound, can be controlled to meet optimal temperature conditions.

71. (New) The device according to claim 68 or claim 69, wherein said probe or different probes are bound at end portions, where said probes or different probes are labeled with no fluorescent dye on said surface of said solid support.

72. (New) The nucleic acid probe of claim 60, wherein said fluorescent dye is selected from the group consisting of FITC, BODIPY FL, BODIPY FL/C3, 6-joe, BODIPY TMR, BODIPY FL/C6, Alexa 488, and Alexa 532.

SUPPORT FOR THE AMENDMENT

Support for Claims 46-72 is found in Claims 1-45 and the specification as originally filed. Support for the dyes recited in Claims 46, 59, and 72 is found on page 22, line 12 to page 23, line 13. Support for the amendment to Claim 5 is found, for example, on page 50. No new matter is believed to have been added by these amendments.